

PORTABLE ANALYSIS SYSTEM FOR CONTROLLING FERMENTATION

IF 02

The **IF-02** analysis system is comprised of an **RP-60** refractometer unit, which constitutes the system's analysis element, and an **FM-01** receiver.

The **RP-60** refractometer unit is a portable, battery-powered device which allows the user to measure the refractive index of a must sample taken from a fermentation vat. The RP-60 combines a control unit with a touch screen display with an extremely compact, high-precision refractometric sensor. The refractometric sensor can be integrated with the control unit, or connected to it by a 1m cable.

The RP-60 unit is supplied with:

- a sample bowl with magnetic clamp in which the sensor is inserted, designed to contain the sample and protect the sensor from external light.
- a protective extension, which makes it possible to insert the sensor directly into the product while still protecting it from external light.

The data measured at the fermenters is downloaded via USB to the second element of the system; the **FM-01** receiver which performs both data collection and processing functions. The software in the **FM-01** processes the downloaded data and starting from the initial fermentation values (alcohol, nD, conductivity) calculates the variations in the alcohol and sugar content. It then produces graphs to show the alcohol increase curve in relation to the decrease in sugar.

Description of the measuring phases

Preliminary synchronization phase:

Before starting in-field analysis on the fermenters using the **RP-60** portable refractometer, it is necessary to synchronize it with the **FM-01** receiver. This is to transfer the names of all the open batches from the **FM-01** to the **RP-60**, together with all the data relating to the open batches.

In-field measurement phase:

Upon reaching the fermenter you wish to monitor:

- select the Tank/Batch on the **RP-60** touch screen display using the scroll through menu.
- take a product sample and measure the conductivity (essential for the first analysis and optional for the following ones).
- dip the instrument into the must using the sample bowl for the nD (Brix) measurement.
- press OK to acquire the data.

Data uploading and processing phase:

Once the analysis in the field has been completed, the collected data is sent to the **FM-01** receiver which records and processes it for viewing in a tabular or graphical format.



TECHNICAL FEATURES

Application:

Measurement of natural musts during fermentation.

Type of measurement:

Temperature compensated refractometric measurement made using the RP-60. Conductivity measurement made by manually dipping a conductivity probe (supplied) into the sample bowl or directly into the product vessel. The measured value is manually entered in the RP-60 unit.

Once the measurements have been made, the RP-60 unit is connected to the FM-01 and the data is downloaded.

Measurement limits:

0...40 Brix (1.3300...1.3999 nD)

Accuracy:

±0.15 Brix

Product temperature:

5... 50°C (41 ... 122°F) with automatic temperature compensation using an internal Pt1000 sensor.

Interfaces RP-60

USB: Connector for connection to the FM-01 receiver

Interfaces FM-01

USB: Type A connector for external connection.

Ethernet: RJ-45 connector for external connection.

Modbus RTU: In additional plastic box (optional).

Outputs: 3 relay outputs for alarm condition signaling which can be set based on fermentation progress. DC/AC 24V/500mA contacts.

Power supply RP-60

Batteries 4x1.2V AA, rechargeable NiMH

Power supply FM-01

AC 100...240V ±10% 50...60Hz 250VA. Connection by means of cable with SP7748 (EEC-7) 10A/250V plug for EC versions or with P620 15A/125V plug for USA versions.

Environmental features

Temperature limits:

Environment: -10...+45 °C (14...113 °F).

Storage: -20...+70 °C (-4...+158 °F).

Degree of Protection in accordance with EN60529:

IP52 – Receiver FM-01

IP67 – Refractometric Probe RP-60



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CONSTRUCTION FEATURES

REFRACTOMETRIC PROBE RP-60

Execution: AISI 316 stainless steel body integrated with the display unit or connected by means of a 1m long cable.

Measurement section:

- Spinel measurement prism
- Electronically compensated LED light source
- CCD sensor element with 2546 pixels.
- Pt1000 temperature probe built in to the sensor. The optical section of the equipment is dehumidified by means of molecular sieve desiccant sachets.

Parts in contact with the product:

- Body in AISI 316 stainless steel
- O-rings in Kalrez 6230 and Viton FKM 75.5.
- Spinel measurement prism

RECEIVER RP-60:

Execution: ABS casing (UL94HB) RAL 7035.

Function:

- Data processing, operator interface, interfacing with analysis units, interfacing with additional elements and with the process line.

Electronic section:

- Central CPU unit with microprocessor and management software on Flash, updatable via PC; interface with FM-01 Receiver by means of USB interface.
- Indication of measurement, software menus, diagnostic menus, error messages and operating status indicator icons on graphic backlit LCD touch screen display.
- 3-level programming software complete with password protection and check menu.
- 6 language options (Italian, English, German, Spanish, French, Chinese) for menu and message display.
- Process temperature expressed in "°C" or in "°F".

RECEIVER FM-01

Execution: INOX AISI 304 stainless steel casing.

Electronic section:

- Microprocessor-controlled industrial CPU monoboard.
- Graphic display on LCD touch screen 800x600 10.4" monitor
- 512 MB Flash Memory.
- Possibility to carry out 'Batch Management' by recording all the operations and analyses periodically for each vat or tank in fermentation.

